IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants:	Kurt Haller et al.
U.S. Serial No.:	10/678,883
Filing Date:	October 3, 2003
Title:	METHODS FOR CORRELATING BACKSIDE AND FRONTSIDE DEFECTS DETECTED ON A SPECIMEN AND CLASSIFICATION OF BACKSIDE DEFECTS
Group Art Unit:	2823
Examiner:	Hsien Ming Lee

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3/24/08

Davis Branco Date

REPLY BRIEF TO EXAMINER'S ANSWER

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir/Madam:

This paper is submitted in reply to the Examiner's Answer mailed January 22, 2008 and the replacement Examiner's Answer mailed February 12, 2008 (hereinafter "the Examiner's Answer"). Appellant respectfully requests that the Board consider this Reply Brief, which is presented within two months from the date of the Examiner's Answer thereby complying with 37 CFR § 41.41(a)(1). This Reply Brief does not include any new or non-admitted affidavit or other evidence thereby complying with 37 CFR § 41.41(a)(2).

The Examiner's Answer maintains the 35 U.S.C. § 103 rejections of claims 1-3, 8, 10-16, and 19. The Examiner's Answer raises new points of argument on pages 7-20, in Section 10 "Response to Argument," which are addressed in detail herein.

Claims 1, 2, 16, and 19

The Examiner's Answer states:

> After reviewing the arguments in the Appeal Brief, it is quite clear that Appellant's assertion mainly is on the ground that the cited art does not provide a motivation to arrive the claimed invention and the Final rejection is based on impermissible hindsight. In other word, Appellant maintained that the cited art does not provide an explicit suggestion for a modification or for a reasonable expectation of success that would be able to properly establish *prima facie* obviousness. (Examiner's Answer -- page 6, emphasis in original).

The Examiner's Answer also states:

> As stated above, the core Appellant's arguments are stated in page 4 through page 24 (i.e. total 21 pages). Seventeen pages out of 21 pages, Appellant repeatedly argue that Wooten et al. do not teach or **explicit suggest** any "correlating" step to determine any relationship between frontside defects and backside defects. Therefore, the Final rejection is based on impermissible hindsight (see the foregoing point 9); and one of the ordinary skill in the art would not be motivated to modify Wooten's teachings in any manner to determine any correlation between frontside defects and backside defects. (Examiner's Answer -- page 8, emphasis in original).

Appellant is aware that any suggestion or motivation to combine or modify prior art references may be implicit. However, the 17 out of 21 pages of the Appeal Brief filed by Appellant on October 31, 2007 (hereinafter "the Appeal Brief") referred to in the above portion of the Examiner's Answer contain extensive excerpts from the Final Office Action mailed January 4, 2007 (hereinafter "the Final Office Action") and the Advisory Action mailed March 16, 2007 (hereinafter "the Advisory Action") and contain Appellant's arguments traversing the Examiner's basis for the rejections contained therein. Since none of those excerpts contain any assertions that Wooten implicitly suggests any "correlating" step to determine any relationship between frontside and backside defects, Appellant's arguments in those 17 pages contain no arguments that Wooten does not implicitly suggest any such "correlating" step. In addition, the entirety of the Final Office Action and the Advisory Action include no contention that Wooten implicitly suggests a "correlating" step to determine any relationship between frontside and backside defects. Appellant is unaware of any requirement for presenting arguments for patentability other than those traversing reasons for rejection provided to Appellant by the Examiner.

Furthermore, although the Examiner appears to traverse Appellant's arguments as those arguments have been characterized by the Examiner in the above referenced portions of the Examiner's Answer, the Examiner's Answer states that "The **major difference** between the claimed invention and Wooten's teachings is that Wooten does not explicitly suggest ' correlating the frontside defect with the backside defect if the portion of the backside defect is determined to be opposite to the portion of the frontside defect.'" (Examiner's Answer -- page 9, emphasis in original). Therefore, the Examiner's Answer indicates that the Examiner agrees with Appellant's arguments as those arguments have been characterized by the Examiner in the above referenced portions of the Examiner's Answer.

The Examiner's Answer states:

> Appellant concluded that even by locating defect positions on the front side and the backside of the wafer under the microscope, with the assistance of the coordinates obtained from laser scanning inspection which would provide accurate locations of defects on the wafer with respect to a certain reference point (i.e. similar to coordinates on a matrix in Mathematics), one of the ordinary skill in the art would still not be motivated or prompted to determine any correlation between the frontside defect and the backside defect and to see if the frontside defect position is opposite or aligned to the backside defect position; or to see if the frontside defect pattern (e.g. point defect or circular-shaped defect or line-shaped crack) is similar or dissimilar to the backside defect pattern. (Examiner's Answer -- pages 8-9, emphasis in original).

However, the "conclusions" of Appellant referred to in the above-referenced portion of the Examiner's Answer are not based on Appellant's characterization of the teachings of Wooten.

For example, Appellant has not asserted that Wooten teaches or suggests, explicitly or otherwise, locating defect positions on the front side and the backside of the wafer under a microscope, with the assistance of coordinates obtained from laser scanning inspection which would provide accurate locations of defects on the wafer with respect to a certain reference point (i.e. similar to coordinates on a matrix in Mathematics). In addition, this characterization of the teachings of Wooten is not accurate. For example, Wooten contains no teaching or suggestion, explicit or otherwise, that the locations of the defects are determined accurately or with respect to a certain reference point. Of course, in order for the systems and methods of Wooten to function as Wooten teaches and suggests they do, the coordinates would have to be determined sufficiently accurately such that frontside defects could be located using the coordinates during review of the defects on the frontside of the wafer and such that backside defects could be located using the coordinates during review of the defects on the backside of the wafer. However, the level of accuracy required for such locating is not disclosed by Wooten and as is known to one of ordinary skill in the art would vary depending on certain other characteristics of the systems and methods of Wooten (e.g., the level of magnification or the field of view of the system(s) used for inspection and the system(s) used for review), which are also not disclosed by Wooten. Therefore, whether the coordinates of the defects on the frontside and the backside of the wafer are determined with sufficient accuracy such that the coordinates could be used to determine if frontside and backside defects are correlated to each other, as suggested by the Examiner, cannot be determined from the teachings of Wooten. Furthermore, the coordinates of the frontside defects determined by the systems and methods of Wooten most likely would have to be determined with respect to some reference point on the frontside of the wafer such that that same reference point and the coordinates determined during inspection could be used to relocate the defects during review. In addition, the coordinates of the backside defects determined by the systems and methods of Wooten most likely would have to be determined with respect to a reference point for similar reasons. However, Wooten does not teach or suggest, explicitly or otherwise, that reference points used to determine the coordinates of the frontside defects and the backside defects are the same reference point. Without determining the coordinates of the frontside defects and the coordinates of the backside defects with respect to a certain reference point, which is not taught or suggested, explicitly or otherwise, by Wooten, Wooten does not teach or suggest that the coordinates provide locations of the frontside and backside defects with respect to a common reference point as suggested by the Examiner.

Moreover, even if the Examiner's assumptions about the accuracy and the reference points used to determine the coordinates were correct, one of the ordinary skill in the art would still not be motivated or prompted to determine any correlation between the frontside defect and the backside defect or to see if the frontside defect position is opposite or aligned to the backside defect position or to see if the frontside defect pattern (e.g., point defect or circular-shaped defect or line-shaped crack) is similar or dissimilar to the backside defect pattern. For instance, the Examiner has provided no basis as to why one of ordinary skill in the art at the time of the invention would be motivated to determine any correlation between frontside defects and backside defects. In particular, Wooten does not teach or suggest, explicitly or otherwise, that frontside defects and backside defects have any relationship with each other. In addition, the Examiner has provided no evidence that one of ordinary skill in the art at the time the invention was made had any knowledge that frontside defects and backside defects can have any relationship with each other that would motivate one of ordinary skill in the art to attempt to correlate frontside and backside defects to each other using any system or method. Instead, the Examiner's position appears to be that simply because one of ordinary skill in the art would be capable of using the system of Wooten to perform the claimed invention, the motivation for doing so exists. While it is appropriate to determine whether the ordinary artisan possessed knowledge and skills rendering him capable of modifying Wooten in determining if an invention is obvious, in this situation modifying Wooten would not be equivalent to making a technology-independent improvement that results is a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. The Courts have made clear that the teaching, suggestion, or motivation test is flexible and an explicit suggestion to combine the prior art is not necessary. The motivation to combine may be implicit and may be found in the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. *Id.* at 1366, 80 USPQ2d at 1649. "[A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the 'improvement' is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. Because the desire to enhance commercial opportunities by improving a product or process is universal-and even common-sensical-we have held that there exists in these situations a motivation to combine prior art references even absent any hint of suggestion in the references themselves. In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him *capable* of combining the prior art references." *Id.* at 1368, 80 USPQ2d at 1651. MPEP 2143. (emphasis in original). For example, the Specification states:

> As the "process window" for semiconductor fabrication processes decreases in conjunction with reductions in the dimensions of semiconductor devices, the impact of backside defects on the yield of fabrication processes increases. For example, as the depth of focus of an exposure system used in a lithography step decreases, backside defects on a wafer may cause more localized regions on the wafer to be out-of-focus during the exposure than in the past. Therefore, the backside defects may cause more variations in the characteristics and/or dimensions of features in a patterned resist across the wafer. Although the contribution of the backside defects to these variations may have been negligible or undetectable in the past, the backside defect may have a significantly greater impact on these variations as the process window of semiconductor fabrication process continues to shrink. (Specification -- page 4, lines 19-29).

Therefore, unlike the evidence of record provided by the Examiner in support of the rejections of claims 1, 2, 16, and 19, Appellant has recognized that backside defects may have some relationship to frontside defects and therefore have developed the presently claimed invention in order to determine if frontside defects and backside defects are correlated. Without any evidence that one of ordinary skill had at the time the present invention was made any knowledge of such a relationship between backside defects and frontside defects and without any suggestion of such a relationship provided explicitly or implicitly by Wooten, one of ordinary skill in the art would not be motivated or prompted to determine any correlation between frontside and backside defects as suggested by the Examiner. For instance, without any knowledge that frontside and backside defects could have such a relationship, one of ordinary skill in the art would not attempt to use the system of Wooten to determine if frontside and backside defects have any correlation. In addition, the Specification states:

> since some backside defects may not be correlated with frontside defects, it may be reasonable to assume that such backside defects may not contribute, or may not contribute significantly, to yield loss. As such, the computer-implemented methods described above may also be used to identify backside defects for which process corrections should be made to reduce occurrence of the backside defects. In this manner, the computer-implemented method may be used to identify yield-reducing backside defects and non-yield-reducing backside defects, which may also be referred to as "nuisance" backside defects. Being able to categorize backside defects in such a manner may reduce the complexity and difficulty of accurately altering parameters of processes and tools because, in some cases, corrections may only need to be made for a portion of the backside defects. However, even backside defects that are correlated to frontside defects may not contribute to reduction in yield if the frontside defects do not contribute to yield. Therefore, the method may further include correlating the backside defects to electrical test results of the wafer at the position of the backside defects. Since the backside defects have been correlated to the frontside defects, determining which electrical test results correlate to the backside defects is relatively trivial. In this manner, backside defects that ultimately reduce semiconductor fabrication processing yield may be easily and accurately determined. (Specification -- page 33, lines 1-18).

Therefore, the presently claimed invention provides specific "improvements" over systems and methods such as those disclosed by Wooten, which are not configured for or cannot be used for determining a correlation between frontside and backside defects, and those improvements are not technology-independent (e.g., stronger, cheaper, cleaner, faster, lighter, smaller, more durable, more efficient, and the like). In addition, since such correlating frontside and backside defects would be a "feature" of a system not provided by the system as taught by Wooten, adding such a feature to the system of Wooten would likely make the system of Wooten more complex and more expensive (e.g., due to the research and/or development efforts necessary to configure the system of Wooten to be able to perform such a feature). Therefore, if one of ordinary skill in the art has no knowledge of such a relationship between frontside and backside defects (which the Examiner has provided no evidence of), one of ordinary skill in the art would not have any knowledge of how such a correlation could yield advantages such as those disclosed in the Specification. Instead, one of ordinary skill in the art would not be motivated to modify the system of Wooten such that it can be used to perform such correlating because as set forth above, such modifications of the system would likely increase the complexity and cost of the system thereby likely making it less attractive to potential customers.

As noted above, the Examiner's Answer states that "The **major difference** between the claimed invention and Wooten's teachings is that Wooten does not explicitly suggest ' correlating the frontside defect with the backside defect if the portion of the backside defect is determined to be opposite to the portion of the frontside defect.'" (Examiner's Answer -- page 9, emphasis in original). However, as set forth in the Appeal Brief and herein, this is not the only difference between the claimed invention and the teachings of Wooten. In particular, Wooten does not explicitly or implicitly suggest or provide motivation for the claimed correlating step.

The Examiner's Answer states:

> one of the ordinary skill in the art, at the time of the invention was made, would have been **capable of modifying** the "base" technique as taught by Wooten in a predictable manner so that **any correlation** between the fronsdie defects and the backside defects located at the predetermined **coordinates** would be uncovered **because** Wooten teaches the "base" method that would sufficiently and effectively to provide frontside defect and backside **locations** in manageable manner, which is able to **reveal correlation or mutual relationship** between the frontside defect and the backside. (Examiner's Answer -- page 10, emphasis in the original).

However, Wooten does not teach, explicitly or implicitly, that the systems and methods sufficiently and efficiently provide frontside defect and backside defect locations in a manageable manner that are able to reveal a correlation or mutual relationship between the frontside defect and the backside defect. For example, Wooten implicitly teaches that the coordinates of the locations of frontside defects are sufficient and efficient for relocating the frontside defects during defect review of the frontside of the wafer. In addition, Wooten implicitly teaches that the coordinates of the locations of backside defects are sufficient and efficient for relocating the backside defects during defect review of the backside of the wafer. However, such teachings do not implicitly suggest to one of ordinary skill in the art that the coordinates of the frontside and backside defects are sufficient and efficient to correlate coordinates of the frontside defects and the backside defects such that a correlation between the frontside defects and the backside defects could be determined.

The Examiner's Answer states:

> Regarding wafer coordinates,...if there were a defect located at (4,4) on the frontside of the wafer and there were another similar defect located at (-4,4) on the backside of the wafer, then it indicated that the frontside defect is reflected over the y-axis with respect to the backside defect; or the frontsdie defect is aligned with the backside defect along an axis that is perpendicular to the wafer surface. (Examiner's Answer -- page 10).

However, Wooten does not teach or suggest, explicitly or otherwise, that the frontside defect coordinates and the backside defect coordinates are determined in this manner. In addition, the assertion that the coordinates of the frontside and backside defects determined by the systems and methods of Wooten have such a relationship is based on lack of any such teaching or suggestion, explicit or otherwise, in the art. For example, Wooten does not teach or suggest, explicitly or otherwise, that the wafer is inverted such that the positions of the wafer before and after inversion are exact mirror images of each other, which would have to be the case if the coordinates could be used in the manner suggested in the Examiner's Answer. More specifically, without any teaching or suggestion, explicit or otherwise, in Wooten as to if the wafer is inverted such that positions of the wafer before and after inversion represent exact mirror images of each other or how accurately the positions of the wafer before and after inversion represent mirror images of each other, it is impossible to know if correlating frontside and backside defects can be performed by comparing frontside and backside defect coordinates determined by the systems and methods of Wooten as suggested in the Examiner's Answer without altering the coordinates of either the frontside defects, the backside defects, or both to take into account rotation of the wafer that may occur during inversion, differences in tilt of the wafer before and after inversion, any alignment of the wafer that takes place before and after inversion, any errors in the alignment of the wafer that takes place before and after the inversion, any errors in the positioning of any other elements of the system that may have to be moved to allow inversion of the wafer to take place, and the like. In other words, it is impossible to predict that the coordinates determined by the systems and methods of Wooten can be used as suggested in the Examiner's Answer based on the teachings and suggestions, explicit and otherwise, in Wooten and based on the knowledge of one of ordinary skill in the art at the time the invention was made.

The Examiner's Answer states:

> Appellant's arguments is based on the assumption that the frontside coordinate is different from the backside coordinate because of wafer's inverting; and thus the frontside coordinate or the backside coordinate needs to be altered in order to correlate defects. The arguments, however, are not convincing because Wooten et al do not teach or suggest the foregoing assumption. (Examiner's Answer -- page 12, emphasis in the original).

First, these arguments are not based on assumptions. Instead, these arguments are based on what one of ordinary skill in the art would conclude regarding the teachings of Wooten without any teaching or suggestion, explicit or otherwise, to the contrary provided by Wooten. In addition, arguments presented by Appellant cannot be dismissed as not convincing simply because Wooten does not teach or suggest "assumptions" made in the arguments when those "assumptions" are reasonable (e.g., based on what one of ordinary skill in the art would understand to be implicitly taught or not taught by Wooten). If Appellant's arguments can be deemed as not convincing simply because they are based on "assumptions" as suggested in the Examiner's Answer, then many of the Examiner's reasons for the rejections could be dismissed for the same reasons because much of the Examiner's basis for the rejections is based on teachings or suggestions not present in Wooten (e.g., that the accuracy of the coordinates determined by the systems and methods of Wooten for frontside defect locations and backside defect locations is sufficient such that the coordinates can be used for correlating frontside and backside defect locations).

The Examiner's Answer states:

> On the contrary, with the assistance of coordinate concept in matrix as in mathematics, one of the ordinary skill in the art would have recognized that by inverting the wafer the backside coordinate would be the reflection of the frontside coordinate. For example, a defect located at (4,4) on X-Y plane coordinate on the frontside will be at (-4,4) on X-Y plane coordinate on the

> backside. When there is a frontside defect located at (4,4) and there is a corresponding backside defect located at (-4,4), it means that the frontside defect is aligned with the backside defect along the axis passing through the point (4,4) in the coordinate and the axis is perpendicular to the wafer surface. Therefore, altering the coordinate is not necessary even inverting the wafer between inspecting the frontside and the backside of the wafer. (Examiner's Answer -- page 12, emphasis in original).

However, Wooten contains no teaching or suggestion, explicit or otherwise, that by inverting the wafer the backside coordinates would be the reflection of the frontside coordinates. In addition, one of ordinary skill in the art would recognize that by inverting the wafer, the backside coordinates determined by the systems and methods of Wooten are not inherently the reflection of the frontside coordinates determined by the systems and methods of Wooten as suggested in the Examiner's Answer. For example, one of ordinary skill in the art would understand that variables of the systems and methods of Wooten that would affect whether the backside coordinates determined by the systems and methods of Wooten are the reflection of the frontside coordinates determined by the systems and methods of Wooten include, but are not limited to, uncertainty or error in the determination of the frontside coordinates, a reference point on the wafer with respect to which the frontside coordinates are determined, uncertainty of alignment of the frontside of the wafer with respect to the system, how the frontside of the wafer is scanned and how the frontside coordinates are determined based on that scanning, uncertainty or error in the inversion of the wafer, uncertainty or error in the determination of the backside coordinates, a reference point on the wafer with respect to which the backside coordinates are determined, uncertainty of alignment of the backside of the wafer with respect to the system, and how the backside of the wafer is scanned and how the backside coordinates are determined based on that scanning. In addition, Wooten does not teach or suggest, explicitly or otherwise, characteristics of the systems and methods of Wooten with respect to any of these variables that would affect whether the frontside coordinates are the reflection of the backside coordinates. In particular, Wooten does not teach or suggest, explicitly or otherwise, characteristics of the systems and methods of Wooten with respect to any of these variables that would suggest, explicitly or otherwise, to one of ordinary skill in the art that the frontside and backside coordinates could be used as suggested in the Examiner's Answer to correlate the frontside defects and the backside defects.

Furthermore, as set forth in detail herein and in the Appeal Brief, Wooten does not teach or suggest, explicitly or otherwise, that the backside coordinates have any relationship to the frontside coordinates. One of ordinary skill in the art would recognize that such a relationship would have to be known in order to use the backside coordinates and the frontside coordinates as suggested in the Examiner's Answer to determine if a backside defect is aligned with a frontside defect along an axis passing through the wafer perpendicular to a surface of the wafer. Furthermore, none of the art of record in the present application teaches or suggests that one of ordinary skill in the art possesses the knowledge and skills rendering him or her capable of determining such a relationship.

Moreover, results of determining if the backside coordinates are the reflection of the frontside coordinates as suggested in the Examiner's Answer and attempting to modify the systems and methods of Wooten such that the backside coordinates are the reflection of the frontside coordinates would not necessarily have been predictable to one of ordinary skill in the art. For example, as set forth above, many characteristics of the systems and methods of Wooten with respect to variables that would affect whether the frontside coordinates are the reflection of the backside coordinates are not taught or suggested, explicitly or otherwise, by Wooten, and one of ordinary skill in the art would recognize that those variables of such systems and methods are relatively unpredictable. Therefore, even if the systems and methods of Wooten can be modified such that the backside coordinates are the reflection of the frontside coordinates, that mere fact does not render the resultant modification obvious. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007). MPEP 2143.01. (emphasis in original).

The Examiner's Answer states:

> Appellant seems to misinterpret the purpose of obtaining reflected images from laser scanning inspection. Wooten made clear that reflected images from laser scan is for providing coordinates (col. 3, lines 57-61, col. 8, lines 22-26) (i.e.

> providing reference points for latter microscope viewing), not for "correlating" purpose or determining if the defect pattern are correlated. Following the laser scan step , the coordinates obtained from the laser scan step are transmitted to a control computer (col. 8, lines 30-34) and then downloaded the coordinate data to the microscope view station (col. 8, lines 41-42 and 48-49) to position the wafer via the coordinates (col. 8, lines 43 and 50) and thus to view the frontside and backside defects (col. 6, lines 21-24). Therefore, one of the ordinary skill in the art would have comprehended that "correlating" defects are to be performed in the microscope view station based on microscopic images, not based on the reflected images from laser scan inspection, as asserted by the Appellant. (Examiner's Answer -- page 13, emphasis in original).

However, Appellant has clearly not misinterpreted the purpose of obtaining reflected images from laser scanning inspection. For example, the Appeal Brief states that "Wooten teaches using front side inspection data to position the front side of the wafer under the microscope at positions of front side defects on the front side of the wafer and using back side inspection data to position the back side of the wafer under the microscope at positions of back side defects on the back side of the wafer." (Appeal Brief -- page 6). Nevertheless, the reasoning underlying the portion of the Examiner's Response cited above appears to be that because Wooten teaches that the purpose of inspection is for providing coordinates used for later microscope viewing, not for a correlating purpose or determining if defect patterns are correlated, one of ordinary skill in the art would have comprehended that "correlating" defects is not to be performed based on the reflected images from laser scan inspection. Therefore, if the reasoning of the Examiner regarding the teachings of Wooten with respect to the "purpose" of laser scan inspection is applied to other teachings of Wooten, since Wooten teaches that the purpose of defect review is for providing judgments as to whether the defects make the wafer unusable (e.g., Wooten -- col. 4, lines 13-19), one of ordinary skill in the art would have comprehended that "correlating" defects is not to be performed based on viewing the frontside and backside defects in the microscope review station. In addition, Wooten does not teach or suggest, explicitly or otherwise, that the microscope review station generates microscopic images as the Examiner's Answer appears to suggest. For instance, Wooten teaches that the microscope review station positions a wafer under the microscope to permit viewing of a defect (presumably by a user) (e.g., Wooten -- col. 4, lines 13-27). However, Wooten does not teach or suggest, explicitly or otherwise, that the microscope review station generates microscopic images that "correlating" defects can be performed based on, as suggested in the Examiner's Answer.

Claim 3

The Examiner's Answer states that "The Examiner disagrees with Appellant's arguments...The visual representation refers to any microscopic images and/or microstructures comprising frontside and backside defects obtained from the microscope view station, which would provide information for visually differentiating the backside defect and the frontside defect." (Examiner's Answer -- page 15). However, microscopic images and/or microstructures that include frontside and backside defects obtained from the microscope view station, which the Examiner contends would provide information for visually differentiating the backside defect and the frontside defect, are not equivalent to a single visual representation of the specimen that illustrates the backside defect and the frontside defect with different formatting to visually differentiate the backside defect and the frontside defect. In other words, multiple microscopic images do not constitute a single visual representation with different formatting to illustrate a frontside defect and a backside defect.

Claim 12

The Examiner's Answer states:

> one of the ordinary skill in the art would have been motivated to use the microscopic viewing data as taught by Wooten to determine parameters for the classifying. For example, setting the defect numbers within the entire wafer surface not more than 3 % of the entire wafer surface area as a acceptance parameter to classify if the wafer is acceptable or not since Wooten et al. teach utilizing the method and system for acceptance test (col. 4, lines 28-30). (Examiner's Answer -- page 17).

However, claim 12 does not recite determining parameters for classifying a wafer. Instead, claim 12 recites, in part: "determining parameters for classifying the frontside defect." In addition, setting parameters for classifying if a wafer is acceptable or not is not equivalent to setting parameters for classifying defects on the wafer. Therefore, even if Wooten teaches or suggests setting parameters to classify if a wafer is acceptable or not, Wooten still does not teach or suggest setting parameters to classify a frontside defect.

Claim 13

The Examiner's Answer states:

> If the correlating step determines that the frontside defect is opposite to the backside defect or the frontside defect is aligned with the backside defect, then one person in the ordinary skill would be able to determine if the root cause of the frontside defect is related to the backside defect, which may be contributed from processing-related mistakes, based on the classification of the backside defect. (Examiner's Answer -- page 18).

However, Wooten does not teach or suggest, explicitly or otherwise, that defects on the front side and back side of a wafer are related in any manner or have any relationship to one another. In addition, the Examiner has not asserted or provided any evidence that one of ordinary skill in the art at the time of the invention had any knowledge that defects on the front side and back side of a wafer can have any relationship whatsoever. Therefore, the Examiner has not provided any evidence that one of ordinary skill in the art at the time of the invention had any knowledge that a root cause of a frontside defect could be determined from a classification of a backside defect. As such, the Examiner has not provided any evidence that one of ordinary skill in the art at the time of the invention would be motivated to determine a root cause of a frontside defect from a classification of a backside defect, as recited in claim 13.

Claim 15

The Examiner's Answer states:

> since by applying Wooten's method and system, one person in the ordinary skill would be able to analyze and categorize the defect pattern and alter the parameter of a process tool, such as altering operating parameter of the microscope view

> station. By analyzing and categorizing the defects and altering the parameter, it would lead to reduce occurrence of the front-side defect or increase acceptance rate since Wooten teaches utilizing the method and system to perform acceptance test (col. 4, lines 28-30). (Examiner's Answer -- page 19).

However, Wooten does not teach or suggest, explicitly or otherwise, that defects on the front side and back side of a wafer are related in any manner or have any relationship to one another. In addition, the Examiner has not asserted or provided any evidence that one of ordinary skill in the art at the time of the invention had any knowledge that defects on the front side and back side of a wafer can have any relationship whatsoever. Therefore, the Examiner has not provided any evidence that one of ordinary skill in the art at the time of the invention had any knowledge that a parameter of a process tool could be altered in response to a backside defect to reduce occurrence of a frontside defect on additional specimens processed in the process tool. As such, the Examiner has not provided any evidence that one of ordinary skill in the art at the time of the invention would be motivated to alter a parameter of a process tool in response to the backside defect to reduce occurrence of the frontside defect on additional specimen processed in the process tool, as recited in claim 15.

CONCLUSION

For the foregoing reasons, and for the reasons set forth in Appellant's Appeal Brief, it is submitted that the Examiner's rejection of claims 1-3, 8, 10-16, and 19 was erroneous, and reversal of the Examiner's decision is respectfully requested.

The Commissioner is authorized to charge any fees which may be required or credit any overpayment to deposit account number 02-0393.

Respectfully submitted,

Dated 3/24/08

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